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Fact Sheet

Swine Health

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External Parasite Control

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External parasitism is a continuing problem for swine producers. Estimates of annual losses to louse and mange infestations range from \$10 million to \$50 million. Lice and mange mites can also mechanically transmit diseases such as swine pox and eperythrozoonosis. The major problems are caused by the hog louse—*Haematopinus suis*—and mange mites—*Sarcoptes scabiei* and *Demodex phylloides*.

Life Cycle of the Hog Louse

The hog louse (Figs. 1 and 2) is a blood-sucking parasite that feeds exclusively on the pig. It is a large ($\frac{1}{4}$ in. long) pest that clings to the hair of the neck, behind the ears

and in the folds of the skin. It can survive for 2-3 days off the pig in warm bedding, but it will not generally attack other species. The life cycle of the louse takes about 25-30 days to complete from adult-egg-adult. The adult life span is about 35 days. An adult female will lay 3-4 eggs daily for approximately 25 days. These eggs are attached to the hair shaft and hatch as nymphs (immature forms) in 12-20 days. Nymphs are similar in structure but smaller than the adult. The nymphs will go through three maturation stages to adulthood. During development, lice may feed in clumps, generally on the more tender areas of the skin. Hog louse infestation starts around the ear and expands to the lower body and then to soft-skinned abdominal areas. All stages

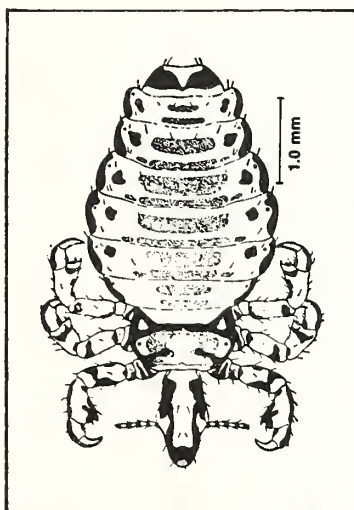


Figure 1, left. The hog louse is a bluish-black pest approximately $\frac{1}{4}$ in. long. It will be most readily observed on the necks of infested pigs. (From Whitehead, 1942. Used by permission from Diseases of Swine, 4th ed., ed. by Howard W. Dunne and Allen D. Leman © 1975 by the Iowa State University Press, Ames, Iowa 50010).

Figure 2, right. Lice may feed in clumps, generally on the more tender areas of the skin.

of the life cycle occur on the skin surface. The pest does not burrow into the skin.

Symptoms

Mild louse infestations may cause no clinical problems. In more extensive infestations, the pests can be seen as dark bluish-black discolorations on the skin. The continuous sucking of blood and lymph causes irritation to the skin, leading to some itching. Damage from lice is primarily irritation, making the hogs restless and decreasing feed intake and growth rate in growing-finishing pigs. In addition, anemia may occur in young pigs because of the blood loss. Lice are also capable of mechanically carrying swine pox virus, *Eperythrozoon suis* and other diseases to susceptible pigs.

Life Cycle of Mange Mites

Mange mites of two types affect swine. *Sarcoptes scabiei* var. *suis* is the most common mite found on swine. *S. scabiei* burrows into the upper two-thirds of the dermis. Initial infestation generally begins in the inner ear and spreads over the head, along the neck and then across the body. The life cycle takes about 15-25 days to complete. New females, as they mature, mate close to the skin surface and then begin new tunnels for their young. This is the only external exposure during the life cycle. The adult female lays 1-3 eggs daily for about 15 days. These eggs hatch in tunnels at about 5-10 days and mature to adults in 10-15 days. The mature female dies approximately 30 days after reaching maturity.

Symptoms

Initially, the skin has small raised areas covered with brownish scabs. This is followed by hyperkeratosis--thickened, rough skin (Figs. 3 and 4). An intense itching may accompany the infestation, although in mild infestations itching may be negligible. The activity of the mites increases as skin temperature is elevated by fever or high environmental temperature. This increases the irritation and feeding rates and may intensify the itching in affected pigs. Probably the highest mite activity is found during the summer but creates less of a problem for producers because of less contact spread and better control ability. High winter populations probably reflect the difficulty of treatment during cold weather and more contact spread.

Infestations by *Demodex phylloides* are uncommon in swine. The mites live in the hair follicles and produce a pimple-like lesion. The complete life cycle is not known, but the mites require about 3 weeks to develop through 3 larval stages to the adult. Adults will live for 1-2 months. Initial infection begins around the nose and eyelids, then moves to the abdomen and inner thigh areas. No serious pruritus (itching) nor other clinical problem is involved with this parasite. Occasionally, the pimples become infected and an abscess develops.

Transmission

Mange mites and lice of hogs are generally found infesting only swine. The pests are not carried on other animals, so pig-to-pig contact is the major means of transmission. Hog lice and sarcoptic mites can live in warm bedding for several days or longer under ideal conditions before attaching to a new host. Occasionally, this will result in clean animals being infected without animal contact. Primary transmission, however, is by direct contact with infected pigs. Demodectic mites are very susceptible to drying and low temperatures and will live only a day or two away from the host.

Treatment

Successful treatment of lice and mange is a difficult assignment because it requires a complete break in the



Figure 3. Shown is a severe sarcoptic mange infestation in a mature pig. It is characterized by rough, thickened folds denuded of hair on the ear and neck regions.

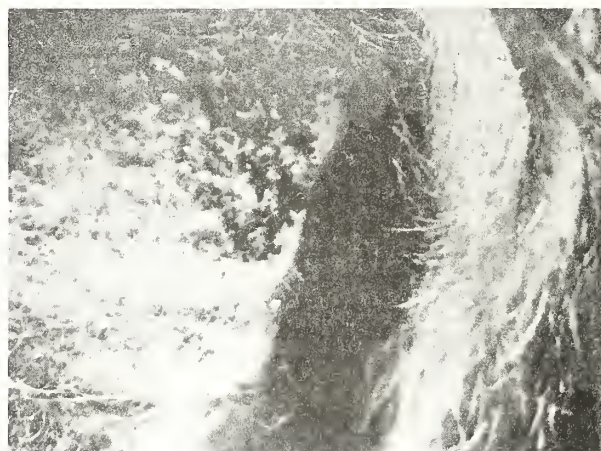


Figure 4. Close-up view of *Sarcoptes*-infested outer ear, showing thickened skin with scab formation.

parasite's life cycle. Because of the increased susceptibility of baby pigs to lice and mange and the increased toxicity of many chemicals to pigs under weaning age, the sow becomes a focal point for pest control measures.

Sows should be routinely sprayed for mange control 45 days prior to farrowing. An additional spraying at 30 days pre-farrowing may be needed for satisfactory control. The mange mites, because of their habit of burrowing deep into the skin and the tissue debris which results, are protected from many surface-applied products. High-pressure spraying (100-250 psi) to force insecticide into the tunnels and to cover the animal completely, particularly around the head and neck, with 2-4 qt. of finished spray is required. Because of the better coverage and penetration of approved insecticides--malathion, toxaphene and lindane--spray applications currently are most successful in mange control. Eradication of sarcoptic mites is extremely difficult under field conditions; however, routine spraying will keep the pest in check.

A successful sow pest control program should be followed by a maintenance program for the growing-finishing pig. Animals about 8 weeks of age should be sprayed with an approved insecticide. A follow-up spraying in 2 weeks is recommended for better control. Additional

applications can be made as needed to market weight provided withdrawal restrictions are followed.

If the sow pest control program has not been followed, mange infestation in suckling pigs can be reduced by applying malathion dust or Korlan® spray to the pigs. When they are more than 8 weeks of age, the control program listed above must be followed.

Successful louse control can be accomplished with all the products labeled for mange control. Additionally, CoRal®, Ciodrin®, Ciovap®, Korlan®, and Rabon® sprays, Tiguvon® pour-on and CoRal®, malathion and Rabon® dusts have been used successfully. Use of Korlan® granules or Rabon®, malathion, or CoRal® dust on bedding in conjunction with spray application may make the treatment more effective. Korlan® spray and malathion dusts can be used directly on the suckling pig for louse control. However, these treatments of the suckling pig are not routinely needed if a successful gestating-sow pest control program is carried out. For louse control on lactating swine, Tiguvon® 3% pour-on can be used without adversely affecting the suckling pig. No known treatment for demodectic mites is available. Infected animals should be removed from the herd to minimize further transmission.

Weather Influences

During severely cold weather, Korlan® granules and malathion, CoRal® or Rabon® dust as bedding treatments, or malathion or Rabon® as direct applications can be used for temporary louse control. Spray applications can be made during winter months by selecting sunny, calm days when the temperature is above freezing. Small portable, low-volume misting applicators can be used for good parasite control. Insecticides can be in an oil or water base with a small quantity (4-6 oz. per animal) applied. Because of the smaller volume, fewer problems of chilling are encountered during cold weather application.

Table 1 lists currently labeled products found successful in external parasite control. Products, use concentrations and approved uses may change periodically. You are encouraged to read and follow the product container label to insure safe and effective treatment.

Withdrawal periods must be carefully observed because of the residue-producing potentials of these chemicals. Read the label for information on withdrawal times, proper product usage, and application rates. Do not overtreat animals with any pesticide.

Table 1. External parasite control products.

Compound	Usage Instructions	Sarcoptes	Demodex*	Lice	Withdrawal times (days)	Special Instructions
Co-Ral® 25% w.p.	Mix 1 lb./50 gal. water			X	0	
Co-Ral® 1% dust	1 oz./head					
Ciodrin® 13.1% e.c.	3 1/3-8 1/3 pt./50 gal. water			X	0	
Korlan® 24E	Mix 2 qt./50 gal. water			X	0	Can be used on pigs less than 30 days old.
Korlan® 5% granules	Apply 1/2 lb./100 sq. ft. bedding			X	0	
Lindane 20% e.c.	Mix 1 pt./50 gal. water	X		X	30	Do not treat pigs before weaning.
Lindane 12.4%	Mix 1 1/2 pt./50 gal. water	X		X	30	
Malathion 4-5% dust	Apply 1/4-1/2 tbsp.	partial		X	0	Can be used on pigs less than 30 days old.
Malathion 57% e.c.	Mix 2 qt./50 gal. water	X		X	0	
Methoxychlor 24% e.c.	Mix 1 gal./50 gal. water			X	0	
Rabon® 50% w.p.	Mix 4 lb./50 gal. water			X	0	
Rabon® 3% dust	3-4 oz./head					
Tiguvon® 3% pour-on	0.5 fl. oz./100 lb. body wt.			X	14	May be used on gestating and lactating sows.
Toxaphene 60% e.c.	Mix 3 pt./50 gal. water	X		X	28	Do not treat pigs before weaning.

This table represents usage and withdrawal information as presented on current labels. Label changes can occur at any time. Before using any pesticide, read and follow the label directions.

The amended Federal Insecticide, Fungicide and Rodenticide Act of 1972 requires that all pesticides be classified for *general* or *restricted* use. Producers purchasing or using restricted-use pesticides after October 21, 1977, must become certified or additional state regulations may limit use of certain pesticides. Check with your state Extension specialists for certification or use requirements and for the specific latest control recommendations.

*There are no known treatments available for Demodex infections in swine.

